

# HUMIDITY

ROTRONIC NEWS

**rotronic**  
LEADING IN HUMIDITY MEASUREMENT



**Fraunhofer IBP**  
Fresh air in aircraft cabins

**Proceq and Rotronic**  
Optimal moisture measurement in concrete

**Land O'Lakes, Minnesota USA**  
Perfect powdered milk production

## Dear Business Partners

There's lots of news! First of all, there's a reason to celebrate at Rotronic, because the business year 2010/2011 showed very positive results. In humidity and temperature measurement, we had an increase in turnover of over 25%.

This was certainly due in part to the continual improvement and innovativeness of our products. Again this year, we are pleased to present some innovations in the "Product News" column: the new HC2-AW-USB, the HygroClip XD and the useful glass-case sensor.

And of course we are pleased to report that a proven Rotronic unit has found a new use in the concrete sector. In our customer interview with the Proceq company you will find out how much has to be taken into consideration in concrete construction.

The events in Japan have shaken us all. Where does atomic energy go from here? How can uranium rods be effectively dismantled and made reusable? The nuclear research centre in Mol, Belgium, is looking for answers and solutions on the subterranean research platform "Hades".

Also be amazed at how, at Land O'Lakes, the history of the development of powdered milk takes its course with Rotronic sensors, or the Wien Energie Gasnetz GmbH keeps its buildings and plants in good condition with the proper equipment.



**Gary A. Gähwiler**

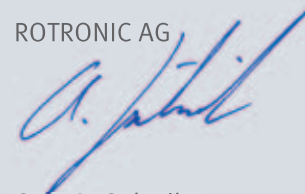
Department Manager

Humidity /Temperature Measurement  
Sales

And, last but not least, there is a competition this year, too. Win one of three Victorinox Swiss Tool Kits in high quality stainless steel! Just enter, and be the happy winner.

Wishing you lots of inspiration and curiosity as you read

ROTRONIC AG



Gary A. Gähwiler

**Wien Energie Gasnetz**

Rotronic HygroGen in use at the test institute for gas and firing technology

**Microstep-MIS**

Humidity measurement in extreme situations

**Fraunhofer-Institute for Structural Physics**

Fresh air rather than thin air in aircraft cabins

**Product News**

News of the Rotronic family

**Proceq and Rotronic**

Optimal humidity measurement in concrete

**Land O'Lakes, Minnesota, USA**

Perfect powdered milk production

**Pharmaceuticals producer Abdi Ibrahim**

sets standards in humidity measurement

**Rotronic humidity sensors in action**

in the subterranean research station HADES

**Competition**

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Competition

# Rotronic in action for the Vienna Energy Gas Network.

Listed buildings optimally maintained.



HygroFlex5 for measurements in new and heritage buildings.

For the modernisation and development of the Simmering location, Vienna Energy Gas Network has invested some 50 million Euros in the last 10 years.

The new premises were opened in 2003, as was the old, brick works building, which was revitalised under strict heritage requirements. The test and experimental institute was also moved to a new building on the works premises that was completed in 2008. The test institute - an accredited test centre for gas and firing technology - was built with two storeys, taking the neighbouring, listed heritage buildings into account.

## Monitoring the relative air humidity

Monitoring of the relative humidity and temperature of the air was also provided for the erection of the test rigs in the new building.

The instruments installed at the end of 2009 were 5 Rotronic HygroLog HL NT data loggers with the next generation HC2-S sensors, 2 HF5 transmitters with 1 HC2 S for the climatic chamber and 1 HC2 IE102 (screw-in sensor), which measures the humidity of the gas at the test rig.

At a Rotronic calibration seminar in Germany, the test institute decided to use the Rotronic HygroGen for their calibration work.

## HygroGen

The HygroGen is an autonomous humidity generator for the calibration of humidity measuring instruments. All it needs is a mains connection. The HygroGen uses the partial flow method to generate the desired humidity. A drying agent is used for low humidity values, and a saturation device for high humidity. The temperature is controlled with a Peltier element.

Wien Energie Gasnetz GmbH is a subsidiary of Wien Energie, and is part of the Vienna Stadtwerke Holding AG. It employs 1,100 people, and supplies some 700,000 customers with natural gas.

# Humidity measurements in extreme situations.

**Microstep-MIS is a company that specialises in the development, production and marketing of monitoring and information systems. First and foremost, the company provides meteorological systems for monitoring the weather at airports and the climatic conditions of roads, ships and caves.**



*Slovakian mountain rescue service at 2000 metres above sea level*

**R**otronic instruments such as the meteorological sensor MP106 and the HC2-S3C03 are stable under varying, extreme climatic conditions, and offer high precision. For this reason, they are used for meteorological purposes and climatic measurements in challenging climatic and geographical conditions, such as deserts, tropical regions and mountainous areas.

## Slovakian Mountain Rescue Service

Microstep-MIS uses Rotronic measurement sensors for the mountain rescue service in Slovakia in mountainous areas at 2000 metres, because they have excellent characteristics at high altitudes.

## Slovakian cave administration

In measurements made by the Slovakian cave administration, the Rotronic HC-S3C03 sensor is used to monitor the relative humidity in the geographic area of the caves, such as near Karst and in various ice caves with high humidity (96-100%). The objective here is to monitor the climate long-term, in order to preserve and protect the caves, which are part of the UNESCO World Heritage. The HC2-S3C03 is further used in air conditioning systems for caves, and in meteorological systems at nuclear power stations.

## Road traffic in Dubai

The climatic conditions in Dubai are extreme. The combination of desert, fog and moisture has serious effects on materials used in road construction and traffic. The demands on humidity measuring instruments are very high: they must work error-free in these extreme situations, and can only be calibrated one time per year. The Rotronic HC2-S3C03 measurement sensor is used in the MEIS company's road-weather system to monitor the weather. Measurements are made of the atmospheric pressure, temperature, wind speed and direction, relative humidity, ground temperature and ground moisture.

## India

From the Himalayas in the north to the tropical south, weather observation systems are installed at India's airports. A meteorological observation system is used to measure the relative humidity, pressure and clouds at the runway and in air traffic control. For these measurements, the Rotronic company's HC2-S3C03 meteorology sensor has been installed.



# Fresh air rather than thin

Stuffy air in an aircraft can certainly give you a headache. Varying pressures during take-off, flight and landing are stressful for the passengers, and low humidity often leads to sensations and symptoms of dehydration.



*The artificial climate in the cabin is a health hazard.*

**T**he crew are even more exposed to the artificial climate of the aircraft cabin. Flight attendants and pilots spend up to 17 hours on board, and often have to fulfil their high demands of service and safety under difficult conditions. Passenger forecasts indicate an annual growth of 5 % up to 2020 ; 15,000 additional aircraft will be in use by then. This growth is associated with high investments and requirements. The cabin air must be optimised with regard to passenger comfort and health, and the working conditions of the crew.

## Intensive research by the Fraunhofer Institute for Structural Physics

The Fraunhofer institute for Structural Physics is also facing the challenge of the complex aircraft climate. This is analysed here in the "Flight Test Facility". The heart of the flight lab is the nose section of a wide-body aircraft, including avionics and cargo area. This is used to simulate a cruising altitude of 10,000 to 12,000 metres and the spatial relationships. The surface temperatures of the fuselage can be varied between -30°C and +45°C, and the cabin temperatures between -20 °C and +35 °C.

Noise and vibrations are realistically imitated. In addition to low pressure, ventilation system, air filtering, cabin lighting, noise and vibrations, the air temperature and relative humidity are also measured.

## Humidity measurement with Rotronic measurement sensors

The humidity of air and materials are measured, on one hand, with regard to the comfort in the aircraft cabin, and on the other hand with regard to the moisture in the insulation packages.

By the nature of the systems involved, very low humidity is frequent in aircraft cabins (in long-distance Economy Class, around 15 %). This is the result of the very dry outside air at about 2 % at 23 °C, and the internal sources of moisture, such as passengers, beverages, etc., which



remain in the cabin due to the recirculation portion of about 40-50 % in the ventilation. Rotronic measurement sensors are used for measurements of this kind. The HygroClip2 performs very well, and can be relied upon to do so even at low humidity between 5 and 20 %.

# air in aircraft cabins.

## Moisture measurement in the insulation packages

A further field of research is the optimisation of the humidity in the insulation packages in the aircraft fuselage. The skin of the fuselage is very cold, down to as low as  $-35^{\circ}\text{C}$ . The moisture condenses and freezes on the skin, and collects in the insulation packages when the dew point is exceeded. The result of this is a reduced effectiveness of the packages, increase in weight, risk of corrosion and electrical malfunctions through melt water.

For humidity measurement in the aircraft lab, a total of 205 HygroClip2, including the complete accessories such as connecting cables, converter cables, docking stations, various sensor modules, etc. are used.



*Nose section of a wide-body aircraft as a research platform.*

## Innovative HygroClip2 Humidity and temperature sensors

- With the latest AirChip3000 technology
- Relative humidity, temperature measurement and dew point calculation
- Outstanding accuracy and repeatability
- With integrated data-logging functions
- Individual precision detection in the sensor
- Auto-diagnostics and automatic correction
- Highest possible measuring accuracy

The Fraunhofer Society is the largest organisation carrying out application oriented research in Europe. Its fields of research are aligned with the needs of humanity with regard to health, safety, communication, mobility, energy and environment.



*Measurement of the humidity of air and materials to improve the cabin air.*

# Our new products at a

## Water activity – HygroLabC1, new with AirChip3000 technology

### Application

For water activity measurements in the laboratory for cheese, meat, tobacco, building materials, animal feeds, bakery goods, paper, medicines, gardening and agriculture, etc.

### Product information

- Four HC2-AW measuring probes can also be attached
- The functions are equivalent to the HP23-AW
- New: Fitted with USB and Ethernet interfaces



## HC2-AW station with USB



### Application

For water activity measurements in bulk goods such as flour, corn, spices. For solid and paste products such as meat, sausage, oils and fats, etc.

### Product information

This measuring probe can be attached directly to a PC/Notebook with the USB cable

- The HW4 software must be installed
- It replaces the HygroLab wherever there are PCs and Notebooks available

## Meteorology sensor with configurable outputs

### Application

Agriculture, OEM, meteorology, use in hand-held meters, data loggers, transmitters and OEM products.

### Product information

- This sensor can be powered by 5 to 24 VDC
- The output voltages can be freely selected from 0 to 1V, 0 to 5V or 0 to 10V
- There is also an RS-485 output



# glance.

## Transmitter – HygroFlex7, new: available with display

### Application

For industrial applications, building management, underground railways and tunnel construction, etc.

### Product information

- Measures relative humidity, temperature and the melting and freezing point
- Can be used in the ranges  
-100...150 °C / 0...100 %rh
- Automatic sensor test & drift compensation
- Stores up to 2000 pairs of measurement values with HW4 software



## HygroFlex5 – new: with 85 to 240 VAC



### Application

For HVAC applications, building management, museums, libraries, etc.

### Product information

- Interchangeable probe for easy maintenance
- Measures relative humidity, temperature and melting or freezing point
- Calculates all psychrometric values, automatic sensor test & drift compensation
- New: Additional power supply with mains voltage of 85 to 240 VAC possible

## HC-IS25 – New glass-case sensor

### Application

For humidity measurement in clean rooms, glass cases, museums, hotels, cabins, air-locks, containers, laboratories, in medical technology, in yachts and cruise liners - in all places where inconspicuousness is a must.

### Product information

- Usable in temperatures up to approx. 85 °C (depending on the filter)
- Range, humidity: 0...100 %rh
- Installation opening max. 25.9 mm  
Installed wall thickness 9 mm
- Overall length of sensor 65 mm with protective cap



# Optimal measurement of moisture in concrete. Rotronic offer the solution.

For almost 60 years, Proceq SA has been developing and producing quality measurement instruments for non-destructive inspection in the metal, concrete and paper industries. The company is the worldwide leader in the manufacture and distribution of portable instruments for the non-destructive inspection of concrete on site.

We talked to Janko Meier, the responsible Product Manager at Proceq.

## What instruments does Proceq offer for inspection of concrete?

Proceq markets various instruments for quality inspection in the construction industry, for example, for corrosion inspection, for localising and analysing the reinforcements, or for inspecting the pressure-resistance and homogeneity of the concrete. Since the end of January, we have had the "Hygropin" humidity meter, which is used to determine the moisture in concrete, in our range. The basis of this new instrument is the Rotronic HygroPalm HP23.

## What is the Hygropin used for?

Excess moisture in concrete can have disastrous consequences for the installation of the floor covering. To prevent mould and even more severe damage, reliable methods are needed to investigate the moisture content of surfaces before the next layer of the floor is laid at a building site. Thanks to the small Hygropin measuring probe, moisture can be detected more quickly and simply than ever before.



*Quick, simple measurement of humidity in concrete.*

## How does the Hygropin work, and what do you have to be aware of when using it?

To test the relative humidity, a measurement plug is attached at a certain depth in the concrete plate. This can be achieved either by drilling or by pre-installation in the freshly poured concrete. After a prescribed wait time, the moisture content within the plug is measured. The Hygropin is distinguished by having the smallest probe at present available on the market. This keeps damage of surfaces to a minimum, and considerably reduces the cost of installation. To insert the measurement plug, you only have to drill an 8mm hole in the concrete.

## What industries need the Hygropin? Who are the buyers of this measuring device?

All sectors that have to do with concrete processing or concrete research (concrete workers, pavers, engineering offices, construction management, etc.). Hygropin is also used in research projects at universities.

## What gives Hygropin as a product an advantage over the competitors' humidity meters?

Thanks to the extremely thin sensor, the damage to the concrete is kept to a minimum. The compact form of the sensor is unique in the market (an 8 mm hole, as opposed to up to 19 mm for the competition).

# ture in concrete - Proceq and

The Hygropin has extremely short measurement times: we have a stable measurement within 90-120 seconds. The display shows the relevant measured values, such as temperature and relative humidity (RH).

Trend indicators make it simpler for the user to decide when stable measurement values are present.

The measurements are made according to the ASTM\* F2170 standard. This American test standard, which, by the way, is based on a Finnish standard, is regarded as the compulsory standard by many installers. The instrument can be used in dry or fresh concrete. The add-on for wet concrete allows for installation of the measurement plug right in the shuttering phase.

## Proceq does not produce the Hygropin itself; you had to look for a manufacturer. Why did you choose Rotronic?

In matters of vision and philosophy, Rotronic has a lot in common with Proceq. The location of development and production in Switzerland and the label „Swiss Made“ are important values for both companies. Normally, Proceq manufactures all its products in-house. For this project, however, Proceq joined up with Rotronic, which is already a market leader in humidity measurement.

It was possible to take over the instrument almost one-to-one, because it is equipped with open interfaces. It was complemented by tailor-made documentation, application-specific measurement plugs and a software tool with which the stored data can be analysed on a PC.

The existing device languages, German and English, were supplemented by other languages for worldwide use.

Rotronic's replacement-part and calibration services were decisive for the choice of supplier, as well as the smooth cooperation.



Proceq SA produces high-quality, portable test devices for optimally non-destructive measurement of the characteristics and structural parameters of concrete, metal and paper.

Proceq SA, ISO9001 certified, was founded in Zürich in 1954. For optimal service on site, Proceq is extending its worldwide presence with the help of a global sales and dealer network.



**Janko Meier**  
Product Manager  
Measuring Instruments,  
Concrete,  
at Proceq since 2007

## Product information

**Convenient:** Two independent sensor channels allow simultaneous measurement of the characteristics of the concrete and its surroundings.

**Wide range of measurements:** Measures relative humidity, temperature, melting-point, freezing point, etc.

**Precision of measurement:** Combination of precision and fast reaction time

**Minimal damage:** The damage to the surface of the concrete is minimal, because the diameter of the sensor is only 5 mm.

**Toughness:** A robust stainless-steel housing protects the sensor.

**Data recording:** Recording of the measured values to ensure tracking of information.

\*American Society for Testing and Material

# Perfect production of powdered milk.

For 25 years, Land O'Lakes, Minnesota, USA, has been investing in the research and development of milk production. The company uses the proven technique of spray-drying. Rotronic humidity meters are helping to improve Land O'Lakes' drying processes.



Glenn Ward, researcher and developer, Land O'Lakes.

## Precise research findings thanks to Rotronic humidity meters.

Glenn Ward, active in Land O'Lakes research and development for 25 years now, is responsible for the improvement of throughput and quality of powdered-milk products. Spray-drying is the most frequently used technique for dewatering milk products, because it does not require extreme temperatures, and allows effective conservation of the products, and storage at room temperature.

The great variety of milk products, and their different physical and chemical characteristics, all have specific drying parameters. They are unpredictable, and depend on many factors. Previously drying parameters were determined on an empirical basis at great cost. That's why Glenn Ward developed his own method of demonstrating and verifying the drying. His research had shown that you can deduce the optimal dryer parameters for the desired water content and water-activity value by monitoring the inlet and outlet flow to and from the dryers, and measuring the air temperature and the relative humidity.

**To measure the drying temperature and the absolute and relative humidity, Glenn Ward chose the Rotronic HygroFlex5 series with HC2-IM sensors.**



Rotronic was recommended by experts in the sector because of its precision and reliability.

The results confirmed the research, and the dryers now operate at higher throughput and with improved product quality.

Meanwhile, Glenn Ward has installed the Rotronic transmitters in all the spray dryers, and is now extending his applications to other Land O'Lakes facilities.

Land O'Lakes, Inc. was founded in 1921 by 320 representatives and milk manufacturers as the "Minnesota Creameries Co-operative". The name Land O'Lakes comes from the nickname of the State of Minnesota: "Land of 10,000 Lakes". Today, Land O'Lakes is the second-largest cooperative in the USA, with more than 3,200 member manufacturers, 1,000 member cooperatives and some 9,000 employees, who work for more than 300,000 agricultural producers. They process more than 12 billion pounds of milk a year, and are among the largest butter and cheese manufacturers in the USA. Land O'Lakes is active all over North America and in more than 50 countries worldwide.

# Abdi Ibrahim banks on quality in humidity measurement.

With trail-blazing, innovative methods, Abdi Ibrahim manufactures medicines and products that serve the well-being of mankind. With his international, fast-growing pharmaceutical company, Abdi Ibrahim sets standards of quality in production and technology.

**T**he production plant in Esenyurt, which went into operation in the year 2000, is equipped with the latest top technology. All the systems in use at the plant have the newest technologies, and conform to the current “Good Manufacturing Practice” (GAMP) guidelines.

In the production locations and stores, the measurement of relative humidity is absolutely essential to guarantee the efficacy and durability of the products. In suitable laboratories, measurements are made to research optimal production and

storage, and thus to support and continually improve them.

The processes are monitored for 24 hours. Measurements are taken of the relative humidity, the absolute humidity in cold rooms, and the kinetic mean temperature in stores. All steps are monitored, logged, calculated, taken care of and regulated. Some of the areas are climatically very challenging, with microparticles and high temperatures. Thanks to the Rotronic HygroClip technology, however, it is possible to determine precise values even in these conditions.

For over 10 years now, Abdi Ibrahim has been banking on Rotronic instruments, because of their simple calibration, high precision, reliability, quality, and above all because of the wide knowledge of the Rotronic employees in the area of humidity measurement.



*Measuring the relative humidity in the production of medicines.*

# Rotronic humidity sensors at work.

The nuclear research centre (EURIDICE) in Mol, Belgium, uses the research station "HADES," which is located 223 metres underground, for a comprehensive programme of experiments aimed at making atomic waste reusable. Our Belgian distributor, Krautli, was able to deliver HygroClip 2 probes for the project.



HygroClip HC2-C04

**J**ust now, a specially built gallery is being equipped with heating elements and sensors to simulate the events during these disposal processes. For the impermeability by radioactive radiation, it is important

that the walls of the gallery are able to meet the planned requirements on water absorption. Suitable humidity sensors are needed to monitor these processes.

**To monitor the progress of hydration, spot measurements are necessary.**

Many sensors are out of the question, because they do not allow spot measurements at the required spacing to monitor the progress of hydration within the bentonite walls. Because of the already installed water filters, with which the water pressure is measured after saturation of the ben-

tonite blocks, the Rotronic HygroClip HC2-C04, with its diameter of 4mm, is the ideal sensor.

At present, 11 of these sensors are in use in the research project. The environmental conditions can be recorded in a controlled manner with the standard HygroClip investigation.



Jan Verstricht  
EIG EURIDICE  
Project Engineer

# Rotronic and Trescal decide on partnership.



**With the aim of satisfying the growing and rapidly changing needs of its customers, Rotronic France is always on the lookout for new market opportunities and promising alliances.**

**T**rescal is regarded as an international specialist in the area of calibration management, is represented in 12 countries, and employs more than 1400 people at 40 locations worldwide.

Trescal's core competencies include calibration and repair of test and measurement instruments or test rigs, management of technical devices, software for monitoring calibration and test equipment, and special solutions. Every year, more than 50,000 measuring instruments are sent to

Trescal in need of either repair, calibration or adjustment. In order to deal with this high volume, and to ensure professional, efficient calibration, Trescal and Rotronic France decided to go into cooperation.

One result of this partnership is an official Rotronic calibration laboratory at Trescal in Toulouse. This laboratory has the latest measuring equipment, for example, the newest HG2 calibration generator.

The specialists at Trescal and Rotronic France work closely together, and the

Trescal employees are continually trained in courses, and brought up to the state of technology in matters of calibration.



Christophe Thubert, Rotronic France  
Francis Richard, Trescal  
Thomas Ryan, Rotronic France



Enzo Scandola / Marco Colombo, Rotronic Italy

# The iPad goes to Italy.

**Congratulations to the winner of the 2010 "Humidity News" competition!**

Ezio Scandola, GlaxoSmithKline Manufacturing Spa in Verona (I) is the happy new iPad owner. Have fun!

## Enter and win.

**Find the solution and win one of three "Swiss Tool Spirits"!**

Look for the letters in this issue of Humidity News that are highlighted in yellow. Put them together in the sequence of the pages, and you'll have the word we're looking for. Either send the answer by e-mail to [kow@rotronic.ch](mailto:kow@rotronic.ch) or write the word in the boxes below, add your contact data, and fax to +41 44 838 13 07. Closing date is the 30th of November 2011

**Solution:**

Forename

Surname

Company

Position

Street,

City Postcode

E-mail



### Competition Conditions

The closing date for the competition is the 30th of November, 2011. The winners will be informed before the 10th of December 2011. Participation is free, and incurs no obligations. The winners will be informed personally, and their names may be published. A cash payment in lieu of the prize is not possible. No correspondence will be entered into about the competition, and the judges' decision is final. Rotronic employees and their relatives may not take part. Personal data will be treated confidentially, and not disclosed to third parties.

### We will be represented at these fairs.

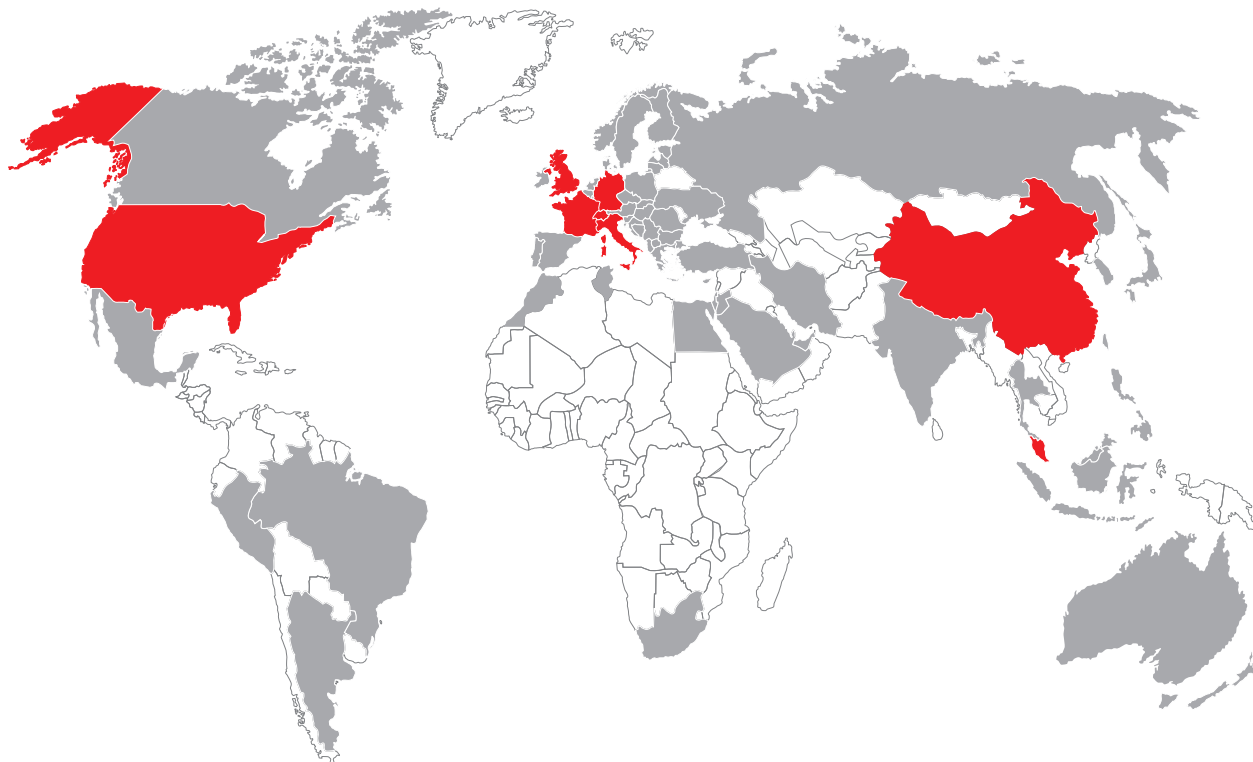
Fair	Location	Date
Miconex 2011	Beijing (CN)	30th August - 2nd September 2011
ineltec 2011	Basel (CH)	13th - 16th September 2011
Elmia Fastighet 2011	Jönköping (SE)	20th - 22nd September 2011
Meteorological 2011	Brussels (BE)	18th - 20th October 2011
China-Pharm 2011	Shanghai (CN)	25th - 28th October 2011
Expoquimia 2011	Barcelona (ES)	14th - 18th November 2011
AHR 2012	Chicago IL (USA)	23rd - 25th January 2012
Lounge 2012	Kalsruhe (D)	28th February - 1st March 2012
INTERPHEX 2012	New York, NY (USA)	1st - 3rd May 2012
Achema 2012	Frankfurt (D)	18th - 22nd May 2012
Sensor+Test 2012	Nuremberg (D)	22nd - 25th May 2012

# ROTRONIC WORLDWIDE.

ROTRONIC is present in more than 40 countries worldwide. You will find a complete list of all our partners, which is always kept up to date, at [www.rotronic-humidity.com/international](http://www.rotronic-humidity.com/international)

■ ROTRONIC International

■ ROTRONIC Partner



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# rotronic

LEADING IN HUMIDITY MEASUREMENT